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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/612,300	07/03/2003	Sang-Su Lee	Q75923	3197
23373	7590	03/23/2005	EXAMINER YOHA, CONNIE C	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			ART UNIT 2827	PAPER NUMBER

DATE MAILED: 03/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/612,300	LEE ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Connie C. Yoha	2827	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 03 July 2003.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-24 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-8, 11, 12, 15-21 and 24 is/are rejected.  
 7) Claim(s) 2, 4 and 9 is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 29 January 2004 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**CONNIE C. YOHA**  
**PRIMARY EXAMINER**  
*Connie C. Yoha*

- 4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date: \_\_\_\_\_.  
 5) Notice of Informal Patent Application (PTO-152)  
 6) Other: \_\_\_\_\_.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date 8/04.

## DETAILED ACTION

1. This office acknowledges receipt of the following items from the Applicant:  
Papers submitted under 35 U.S.C. 119(a)-(d) have been placed of record in the file.  
Information Disclosure Statement (IDS) filed on 8/16/04 was considered.
2. Claims 1-24 are presented for examination.

### *Specification*

#### *Title*

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed

### *Claim Objections*

4. Claim 19, 4 and 2 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. For example, claim 19 recite the limitation of “generating a request for replacing the memory with a new memory when a number of the defective cells in the memory **exceeds a number**”. According to the claim, examiner can not determined what number the defective cells needs to exceed. Claim 2 and 4 also have a similar problem, where applicant claimed the defective cells must exceeds a predetermined number. Examiner cannot determines what is a **predetermined number** represents. Explanation and correction are required.

***Claim Rejections - 35 USC § 112***

5. Claim 3 and 5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

There is insufficient antecedent basis for the limitations.

In claim 3, line 9, recites the limitation "the system controller".

In claim 5, line 6, and 9 recite the limitation "the system controller".

***Claim Rejections - 35 USC § 112***

6. Claim 5, 6, 15, and 16 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is vague and not clear, therefore cannot be understood by the examiner if "data registers" on line 7 or claim 5 is the same or different from the "data register" on line 3 of claim 5.

Claim 6, 15, and 16 are rejected due to the rejections of the parent claim.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1-5, 7, 11-12, and 18-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Sasaki et al, Pat. No. 4942556.

With regard to claim 3, Sasaki discloses an apparatus for restoring defective memory cells, comprising: a memory scan (fig. 4, 9), which scans a memory in response to a control signal (col. 10, line 3-9) to determine whether at least one cell of the memory is defective at an operation start time (col. 16, line 9-12) and generates defect information (fig. 4, 18, 16, 12); and a memory controller (fig. 4, including element 2, and 4), which receives the defect information (fig. 4, 18, 16, and 12) (also with regard to claim 4 and 19) and converts a requested external address into an internal address for accessing the memory (col. 10, line 13-16), and replaces said at least one defective cell in the memory with spare memory provided in said memory controller (col. 9, line 47-57) (col. 10, line 37-39), wherein spare memory, rather than the defective cell is accessed by the system controller when the requested external address corresponds to the defective cell (col. 8, line 39-45).

With regard to claim 5, and 7, Sasaki discloses wherein the memory controller comprises: data registers (fig. 4, 4) which store external addresses corresponding to said at least one defective cell in the memory (col. 9, line 49-51); comparators (fig. 7, 4) which compare each of the external addresses stored in the data registers with the external address applied by the system controller (col. 9 line 51-57) registers (fig. 4, 4) which are activated depending on a comparison result (col. 9, line 54-57); a match detector which detects if an external address that matches the external address applied by the system controller exists among the external addresses stored in the data registers by referring to the comparison result (col. 9, line 57-61) (col. 11, line 66-col. 12, line 1); a multiplexer (fig. 4, 5) which controls a data path to the data registers or to

the memory depending on a detection result of the match detector; and a controller (fig. 7, 3) which loads the external addresses of said at least one defective cell in the memory into the data registers by referring to the defect information and replaces said at least one defective cell in the memory with the data registers, depending on the detection result of the match detector, so that the data registers can be accessed instead of the defective cell (col. 9, line 47-61) (col. 12, line 37-43).

**Drafted as Method claim**

As per claim 1, 2, 11-12, and 18-21 are encompass the same scope of invention as to that of claim 3, 5, and 7 except they draft in method format instead of apparatus format. The claim is therefore rejected for the same reason as set forth above.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 6, 8, 17, 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al, Pat. No. 4942556 in view of Cloud et al, Pat. No. 6199251.

With regard to claim 6, as applied in prior rejection, Sasaki disclosed all claimed subject matter except discloses a delayer which delays an internal address and a

control signal before the internal address and the control signal are applied to the memory and when a request is issued for a defective cell in the memory, so that the defective cell and its corresponding replacement data register are prevented from competing with each other in regard to memory access. However, Cloud discloses a delayer circuits (fig. 11, 1204), used to delay reference signal that is being sent to the error detection circuit after a predetermined delay time (col. 9, line 7-10) to enhance and satisfies the application's performance requirements. Therefore, it would have been obvious for one having an ordinary skill in the art at the time the invention was made to incorporate the use a delayer in Cloud into Sasaki's to delay the internal address and a control signal before the internal address and the control signal are applied to the memory so as to resolved the conflict of accessing the defective cell and its corresponding replacement data register, thus improve performances (also with regard to claim 8).

**Drafted as Method claim**

As per claim 17 and 24 are encompass the same scope of invention as to that of claim 6 and 8 except they draft in method format instead of apparatus format. The claim is therefore rejected for the same reason as set forth above.

***Allowable Subject Matter***

9. Claim 9, 10, 13-14, and 22-23 are objected as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 15 and 16, would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2<sup>nd</sup> paragraph, set forth in this Office action and rewritten in independent form to include all of the limitations of the base claim and any intervening claims.

The prior art of record does not show the limitation of the number of data registers is restricted to 0.1% of a storage capacity of the memory.

The prior art of record does not show the limitation of the operation speed of the comparator, the match detector, and the multiplexer is faster than a speed of the controller.

### ***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure. Dutton (4654847), LaVallee et al (4475194) disclose a memory device having replacement of defective memory.

11. When responding to the office action, Applicants= are advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist the examiner to locate the appropriate paragraphs.

12. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the date of this letter. Failure to respond within the period for response will cause the application to become abandoned (see MPEP 710.02 (b)).

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to whose telephone number is (571) 272-1799. The

examiner can normally be reached on Mon. - Fri. from 8:00 A.M. to 5:30 PM. The examiner's supervisor, Hoai Ho, can be reached at (571) 272-1777. The fax phone number for this Group is (703) 872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-0956.

14. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov> should you have questions on access to the Private Pair system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
C. Yoha

March 2005

  
CONNIE C. YOHA  
PRIMARY EXAMINER